

# Cargo Securing

## Cargo securing guidelines

### IMO/ILO/UN ECE



### EN 12195-1

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPAISCHE NORM

EN 12195-1

December 2003

ICS 55.180.99

English version

Load restraint assemblies on road vehicles - Safety - Part 1:  
Calculation of lashing forces

Dispositifs d'arrimage des charges à bord des véhicules routiers - Sécurité - Partie 1: Calcul des tensions d'arrimage

Ladungssicherungseinrichtungen auf Straßenfahrzeugen - Sicherheit - Teil 1: Berechnung von Zurrkräften

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EUROPAISCHES KOMITEE FÜR NORMUNG

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Date: 2007-10

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CEN/TC 168

Secretariat: BSI

Load restraint assemblies on road vehicles — Safety — Part 1: Calculation of securing forces

Ladungssicherungseinrichtungen auf Straßenfahrzeugen — Sicherheit — Teil 1: Berechnung von Sicherungskraft

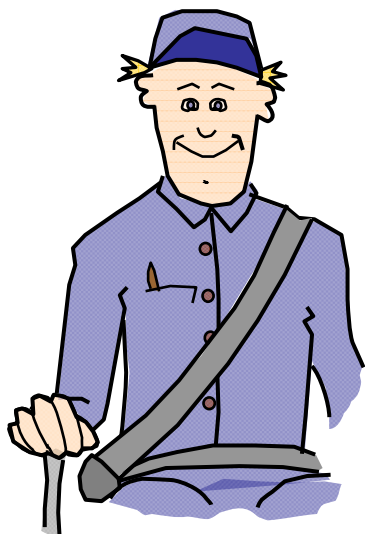
Dispositifs d'arrimage des charges à bord des véhicules routiers — Sécurité — Partie 1: Calcul des tensions de protection

ICS:

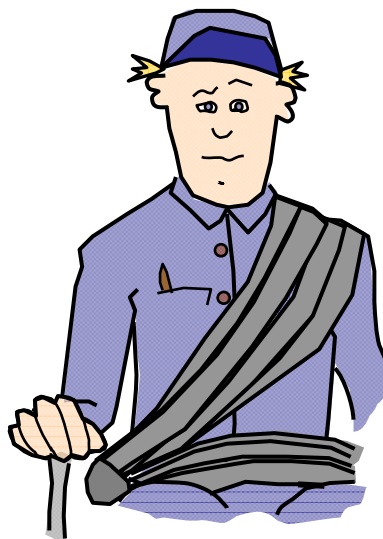
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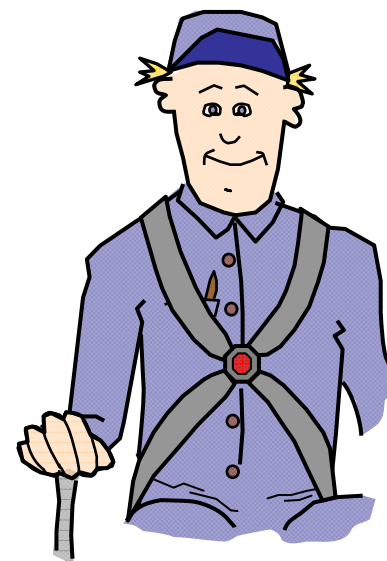
# Cargo Securing



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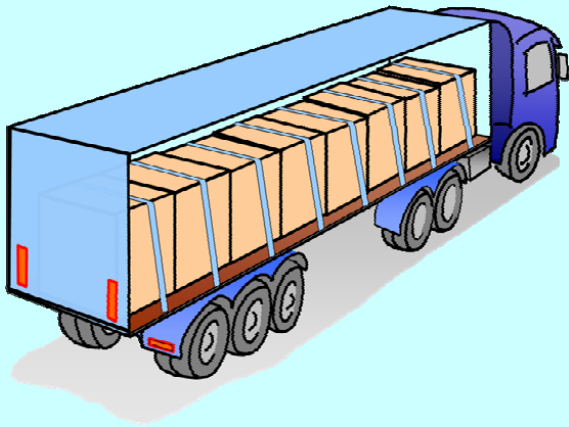
Rev prEN  
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# Cargo securing example 1

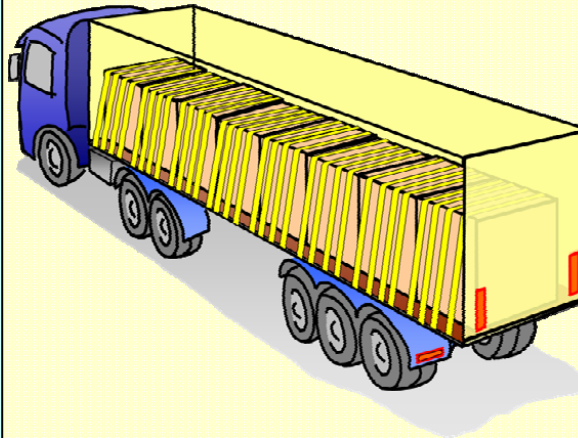
Required number of top over lashings to prevent sideways sliding

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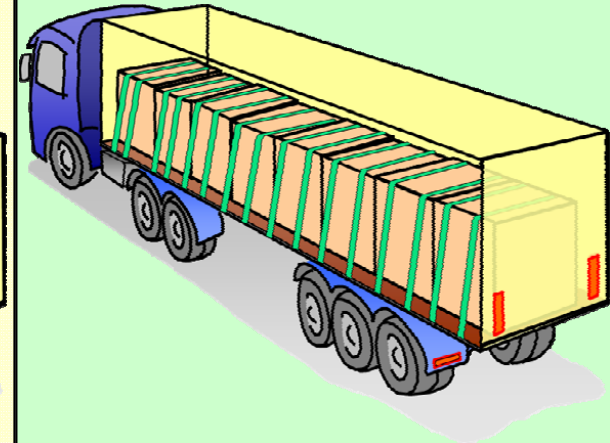
**8 top over lashings**  
(One lashing / section)

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**32 top over lashings**  
(Four lashings / section)

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**16 top over lashings**  
(Two lashing / section).

## Reasons for the difference:

- Static friction =  $\mu_{\text{static}} = 0.4$
- Vertical force =  $n \times 2 \times S_{\text{TF}}$

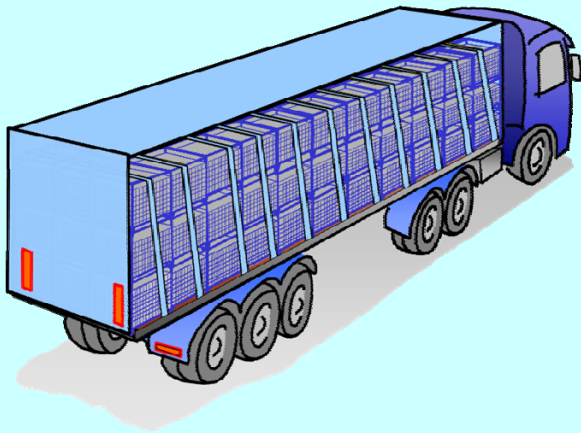
- Dynamic friction =  $0.7 \times \mu_{\text{static}} = 0.28$
- Vertical force =  $n \times 1,5 \times S_{\text{TF}}$

- Estimated friction = 0.4
- Vertical force =  $n \times 2 \times S_{\text{TF}}$
- Safety factor  $f_s = 1,1$

# Cargo securing example 2

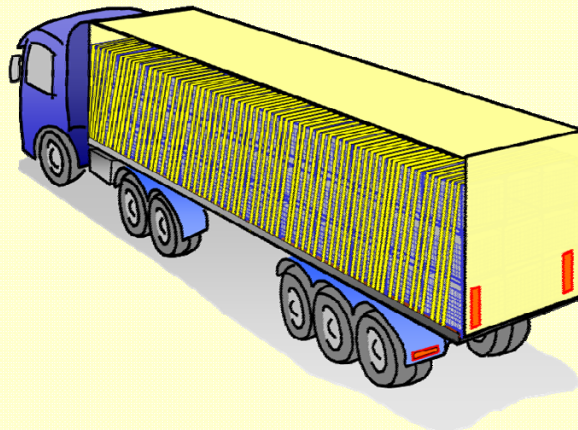
Required number of top over lashings to prevent sideways tipping

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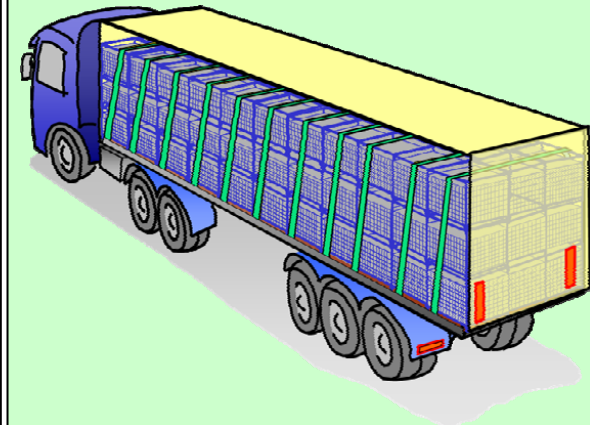
**11 top over lashings**  
(One lashing / section)

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**66 top over lashings**  
(Six lashings / section)

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**11 top over lashings**  
(One lashing / section)

## Reasons for the difference:

- Side acceleration 0.5g
- Vertical force =  $n \times 2 \times S_{TF}$
- Internal friction considered

- Side acceleration 0.7g
- Vertical force =  $n \times 1,5 \times S_{TF}$
- No instructions for internal friction

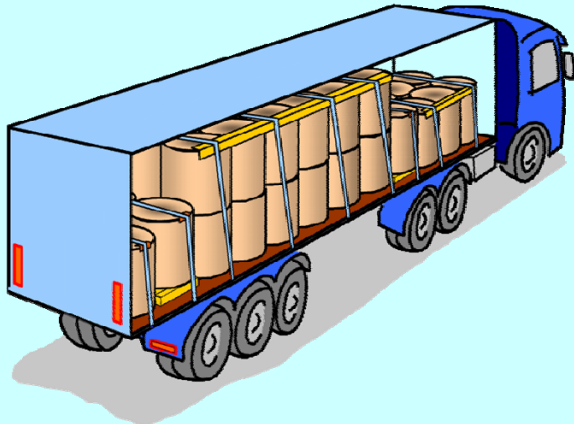
- Side acceleration 0.5g or 0.6g
- Vertical force =  $n \times 2 \times S_{TF}$  or  $n \times 2 \times 0.5LC$
- Safety factor  $f_s = 1.1$
- Internal friction considered



# Cargo securing example 3

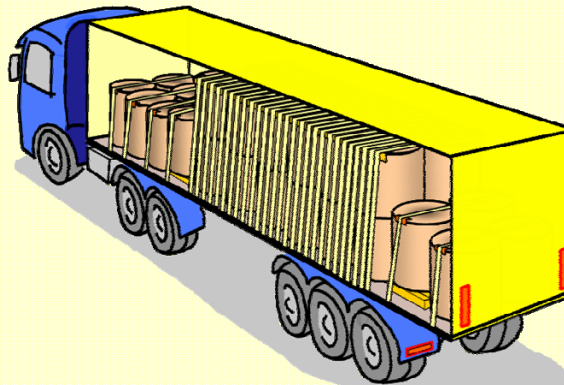
Required number of top over lashings to prevent sideways sliding and tipping

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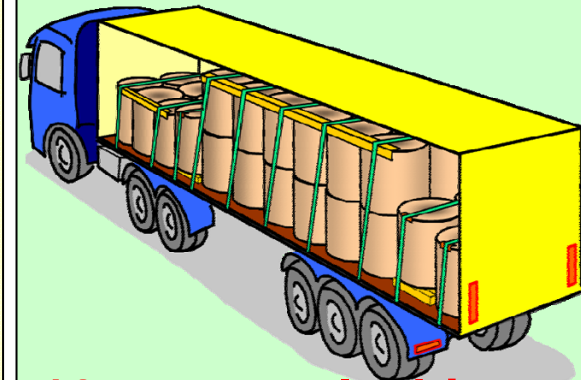
**9 top over lashings**

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**36 top over lashings**

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**10 top over lashings**

## Reasons for the difference:

- Static friction =  $\mu_{\text{static}} = 0.5$
- Side acceleration =  $0.5g$
- Vertical force =  $n \times 2 \times S_{\text{TF}}$
- Internal friction considered

- Dynamic friction =  $0.7 \times \mu_{\text{static}} = 0.35$
- Side acceleration =  $0.5g$  (sliding) and  $0.7g$  (tipping)
- Vertical force =  $n \times 1.5 \times S_{\text{TF}}$
- No instructions for internal friction

- Estimated friction =  $0.45$
- Side acceleration  $0.5g$  or  $0.6g$
- Vertical force =  $n \times 2 \times S_{\text{TF}}$  or  $n \times 2 \times 0.5LC$
- Safety factor  $f_s = 1.1$
- Internal friction considered

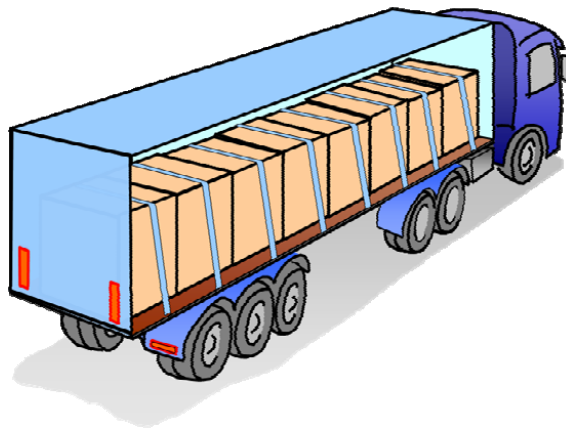
## **IRU members**

**Contact your CEN national standard body and  
support the new revised European standard  
EN 12195-1 Load restrain assemblies on road vehicles  
– Safety –  
Part 1: Calculation of securing forces**



# Put the responsibility in the right place

- Safe transportation of cargo.
- Parties within the transport chain who have control must also have legal responsibility
- Act responsibly from the outset



# Put the responsibility in the right place

- Current legislation allows an industry to load incorrectly
- The driver faces the sanctions and has to accept liability for the errors of others
- This is unreasonable in a legal society





# Put the responsibility in the right place

- Belgium,
- Germany,
- Italy,
- Finland and
- Australia

have implemented a change in legislation by transferring legal responsibility to those in a position of control within a freight chain



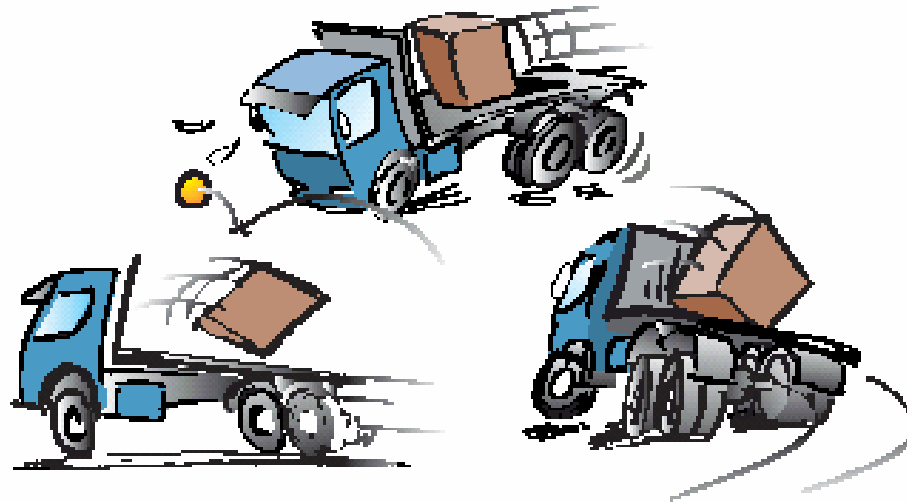
# Put the responsibility in the right place

- The EU commission has drawn up “*Best Practice Guidelines for Cargo Securing*”.
- to increase awareness on how cargo should be secured
- to be used and applied by the party that have a clear legal responsibility



# Put the responsibility in the right place

- lacking in terms of safety should be dealt with directly by the sanctions of society, as with ADR



# Put the responsibility in the right place

## **This is what we want:**

### Legislation and responsibility which covers:

- correct loading and securing of cargo
- correct laden weight
- distribution of responsibility between the responsible parties within the freight chain.



# Put the responsibility in the right place

## **The parties include:**

- The shipper,
- The loader
- The driver,
- The haulage company,

The loader may be the shipper, an industry, a carrier, the vehicle owner or the driver.





# Put the responsibility in the right place

## **The IRU position:**

The EU commission needs to go further by transferring responsibility to those in a position of control within a transport chain, so that those involved have a legal responsibility and act responsibly from the outset.

Every person responsible for the vehicle loading process, both the vehicle driver and the loading personnel in the transport industry, is required to comply with these basic safety regulations

